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ECONOMIC AFFAIRS

No. 201

Transportation Section From

1981 ALMANAC OF CHINA'S ECONOMY

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TRANSPORTATION SECTION FROM 1981 ALMANAC OF CHINA'S ECONOMY

Beijing 1981 ZHONGGUO JINGJI NIANJIAN [1981 ALMANAC OF CHINA'S ECONOMY] in Chinese pp IV, 101-118

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TRANSPORTATION NETWORK, FACILITIES OUTLINED

Beijing 1981 ZHONGGUO JINGJI NIANJIAN [1981 ALMANAC OF CHINA'S ECONOMY] in Chinese pp IV 101-105

[Article by Comprehensive Transportation Research Institute of State Economic Commission: "China's Transportation and Communications for 1980"]

[Text] Communications and transportation is an important component of the national economy with an important bearing on social production, distribution, exchange and consumption. It serves as an important link between the urban and rural areas for the convenience of the workers and peasants, between different regions and between our country and foreign countries. Since the founding of the People's Republic, and under the leadership of the party and the government, there has been great development in our communications and transportation. In the 31 years from 1949 to 1980, our passenger traffic increased by 24 times, and our freight traffic increased by 14 times. Our transport equipment has also continued to increase and the layout of our transportation network has been greatly improved. It has made great contributions to socialist construction and national defense besides improving the people's livelihood.

(I) Transportation Network and Mileage

The total transportation mileage at the end of 1980, compared with 1949, has been greatly increased, as shown in detail in the following table.

Unit: 10,000 kilometers

Forms of transport (Operational Mileage)	1949	1980	Increase from 1949 to 1980 by number of times
Railway	2.20	5.19	2.36
Highway	8.07	87.58	10.85
Waterway	7.36	10.78	1.46
Civil Aviation	1.14 (1950)	19.17	16.82
Pipeline	--	0.86	--
Local Railway	--	0.34	--

Out of the 51,900 kilometers of railway lines, more than 8,000 kilometers have been built into double tracks. Among the highways totaling 875,800 kilometers, 110,000 kilometers are state trunk lines; some 130,000 kilometers are provincial trunk lines; and 630,000 kilometers are county and commune highways. Approximately 151,000 kilometers, or 17.2 percent of the total length, are high-grade or second-grade highways. The length of inland waterway in 1980 did not show any appreciable increase. The highest figure was 172,000 kilometers in 1961. Because of our failure to implement the policy of comprehensive use of rivers, the obstruction to traffic by dams and sluicegates, and the lack of maintenance of the navigation channels, the length of inland waterway was even reduced. The length of pipeline transport in our country has now exceeded 8,000 kilometers, including some 5,438 kilometers of oil pipelines, some 560 kilometers of finished oil product pipelines, and approximately 2,662 kilometers of natural gas pipelines. Our aviation mileage increased most rapidly. At present, there are 159 domestic routes totaling 110,400 kilometers, 23 international routes and 3 regional routes totaling 81,200 kilometers.

(II) Geographical Distribution of Transport Facilities

Before liberation, production in the vast areas of our southwest and northwest was backward because of poor communications facilities. After liberation, the situation was much improved. The ratio of railway mileage in these two areas to the total railway mileage in the country rose from 5.5 percent in 1949 to 24.8 percent in 1979. With the exception of Xizang, all provinces, municipalities and autonomous regions were accessible by railway. The railway lines here were built over high mountains and deep gullies under extremely difficult conditions. The ratio of highways in the southwest areas was also increased from 24.2 percent in 1950 to 31.9 percent in 1979. Now, with the exception of two counties--Motuo in Xizang and Derong in Sichuan--all counties are accessible by highways and 90 percent of the rural people's communes are open to vehicle traffic. A lot of work has also been done in improving river navigation. All these improvements in communication have greatly contributed to economic development in the inland.

The northeast and coastal areas have been all along our important industrial and communications centers. With the further expansion of railway and highway networks in the past 30 years, transportation along the coast and in the inland waterways has also been strengthened, and technical transformation has been carried out on some railway trunk lines with heavy traffic.

In the development of civil aviation, priority has been given to the remote areas where other means of transport are difficult. In the early 1950's, the Tianjin-Chongqing route was inaugurated, followed by the Beijing-Lhasa route in the early 1960's. By now, 80 large and medium-size cities, including those in Yunnan, Xinjiang, Xizang and some other frontier regions, have scheduled flights. These flights have made positive contributions to construction in the frontiers.

Pipeline transport has its own special advantages. The haulage is large; the consumption of energy and raw materials is small; the land occupied is little; and the investment is less. In 1979, the volume of crude oil transported by pipelines amounted to 61.27 percent of the total volume of crude oil transported.

Thus railway traffic was reduced by some 4,000 drums of oil each day. Transportation of oil no longer relied on railway exclusively, and the pressure on railways is much reduced.

Along with the increase of international contacts and the development of foreign trade, our ocean shipping has undergone great development. At present, we have established business relations with 427 ports in 101 countries and regions.

On the whole, our communications system has done a great deal of work in continuing to bring into play the economic strong points in the northeast and the coastal areas and to develop the inland; in combining various forms of transport including railways, highways, waterways, civil aviation and pipelines, into a unified national network for comprehensive utilization; and in consolidating national defense and promoting our international relations.

(III) Transport Equipment

The number of locomotives and rolling stock in 1979 was 2.5 and 5.6 times those in 1949 respectively. Among the large locomotives and rolling stock designed and manufactured in our country, the number of locomotives with 2,200 or higher horsepower now amounts to 60 percent of the total number, and the number of heavy-duty trucks of 50 tons or more amounts to 81.4 percent of the total number. Heavy steel rails of more than 50 kilograms each have been laid in 42.4 percent of the total length of rails, and 91.7 percent of the railways have been equipped with automatic or semiautomatic block signals. Preliminary improvements have been made in the towing capacity, and the number of internal combustion locomotives and electric locomotives amounts to 22.2 percent of the total number. Loading and unloading for trains are now 40 percent mechanized. In water transport, the towing capacity in the inland rivers has increased 8.7 times, and the load carried by steamers and barges increased by 41.4 times from 1950 to 1980. The load carried by motor vessels in water transport has also increased from 68 percent to 88 percent during these years. Coastal shipping in 1980 was 18.5 times more than in 1949. Loading and unloading in large and medium-size ports are basically mechanized. In highways, the number of civilian vehicles in 1980 was approximately 46 times what it was shortly after the founding of the People's Republic. The ratio of all-weather highways has been increased from 42 percent in the early post-liberation period to 67.5 percent (1979 figure).

(IV) Passenger and Freight Transport

(1) Volume of traffic. Passenger and freight traffic has greatly increased in the past 31 years. Compared with 1949, passenger traffic increased by 24 times and freight traffic increased by 14 times in 1980. See following table for details.

Passenger traffic was very heavy in 1980, with a total of 3,418 million passengers carried, an 18 percent increase over 1979. An average of 9.36 million passengers were carried each day (7.94 million in 1979). The cause of the increase is that after the readjustment of government policies, the market has become brisk, and the number of both sellers and buyers has greatly increased. Furthermore, the income of workers and peasants have been increased, and visits to relatives and friends are now more frequent.

Freight traffic in 1980 was lower than in 1979 by 3 percent. This is because of the reduction of loads connected with capital construction and heavy industry during the period of readjustment.

Item		1949	1979	1980	Increase from 1949 to 1980 in number of times	Progressive increase from 1949 to 1980 in percentage
Passenger traffic (in 0.1 billion)	Total	1.37	28.97	34.18	24.94	10.9
	Railway	1.03	8.64	9.22	8.95	7.3
	Highway	0.18	17.86	22.28	123.78	16.8
	Waterway	0.16	2.44	2.64	16.5	9.5
	Civil aviation		298,000 persons	343,000 persons		
Freight traffic (in 10,000 tons)	Total	16097	248028	240506	14.94	9.1
	Railway	5589	111893	111279	19.91	10.1
	Highway	7963	81556	76017	9.55	7.5
	Waterway	2543	43229	42676	16.78	9.5
	Pipeline		11342	10525		
	Civil aviation	2	8	8.89	4.45	4.9

Note: This and the following tables include the figures of local railways.

(2) Turnover. Compared with 1949, the passenger turnover increased by 14 times, and freight turnover increased by 44 times in 1980. See the following table for details.

Item		1949	1979	1980	Increase from 1949 to 1980 in number of times	Progressive increase from 1949 to 1980 in percentage
Passenger turnover (0.1 billion passenger/ kilometer)	Total	155	1968	2280.6	14.71	9.1
	Railway	130	1216	1383	10.64	7.9
	Highway	8	603	729	91.13	15.6
	Waterway	15.0	114	129	8.60	7.2
	Civil aviation	2	35	39.6	19.8	

[table continued]

[continuation of table]

		1949	1979	1980	Increase from 1949 to 1980 in number of times	Progressive increase from 1949 to 1980 in percentage
Freight turnover (0.1 billion tons/ kilometer)	Total	255.47	10907.72	11517.44	45.08	13.1
	Railway	184.00	5598.03	5717.21	31.07	11.7
	Highway	8.14	268.26	255.06	31.33	11.8
	Waterway	63.12	4564.20	5052.76	80.05	15.2
	Pipeline		476	491		
	Civil aviation	0.21	1.23	1.41	6.71	6.3

(3) Average distance of transportation. The average distance of passenger transport was highest in 1949, and was later reduced every year. The reverse is the case of freight transport, the average distance of transport being an increase of 10.3 kilometers each year. See the following table for details.

Average Distance in Passenger Transport

Year	Total average distance	Railway	Highway	Waterway	Civil aviation
1949	113	126	44	97	685
1979	68	142	34	47	1174
1980	67	151	33	49	1153

Average Distance in Freight Transport

Year	Total average distance	Railway	Highway	Waterway	Pipeline	Civil aviation
1949	159	329	10	248		848
1979	440	500	33	1056	420	1538
1980	479	514	34	1184	467	1586

Note: Increase in average distance of waterway transport was particularly rapid, because of the development of ocean shipping in recent years. Average distance of freight transport in ocean shipping was 8,246 kilometers.

(4) Changes in the proportions of various forms of transport. The main trend of change in the forms of transport is as follows: In passenger transport, motor vehicle traffic has increased very rapidly, and now amounts to nearly two-thirds of the total traffic. Railway and waterway traffic has been lower,

now amounting to only one-third of the total. In terms of passenger/kilometers, the proportion of highway traffic has risen rapidly, now being more than 30 percent of the total volume. Since railway passengers generally travel over long distances, their turnover still amounts to 60 percent of the total turnover. Railway transport of freight has also steadily increased, and the volume of freight traffic now amounts to 46 percent of the national total, while the freight turnover accounts for one-half of the national total. Inland river transport has declined; however, because of the rapid development of ocean shipping, its turnover has quickly increased to 43.9 percent of the national total.

Table showing changes in proportions of different forms of transport

Item		1949	1979	1980
Passenger transport--	Total	100	100	100
	Railway	75.2	29.8	27.0
	Highway	13.2	61.7	65.2
	Waterway	11.4	8.4	7.7
	Civil aviation	0.2	0.1	0.1
Passenger turnover--	Total	100	100	100
	Railway	83.9	61.8	60.6
	Highway	5.1	30.6	32.0
	Waterway	9.8	5.8	5.7
	Civil aviation	1.2	1.8	1.7

Item		1949	1979	1980
Passenger transport--	Total	100	100	100
	Railway	34.7	45.1	46.3
	Highway	49.5	32.9	31.6
	Waterway	15.8	17.4	17.7
	Pipeline		4.6	4.4
Passenger turnover--	Total	100	100	100
	Railway	72.0	51.3	49.6
	Highway	3.2	2.5	2.2
	Waterway	24.7	41.8	43.9
	Pipeline		4.4	4.3
	Civil aviation	0.1		

After conversion of the passenger turnover into freight turnover [at the ratio of 1:1] for a comprehensive evaluation, the proportions of various forms of transport to the total turnover will be as follows:

Year	Total converted turnover	Railway	Highway	Waterway	Pipeline	Civil aviation
1949	100	76.5	3.9	19.1		0.5
1979	100	52.9	6.8	36.3	3.7	0.3
1980	100	51.46	7.13	37.55	3.56	0.30

(5) Freight composition. For a long time, energy resources have been the foremost item in the composition of our freight traffic with capital construction materials in the second place. The ratio of agricultural products to the total volume is not high.

In 1979, energy resources accounted for approximately 40 percent of the total volume of national freight traffic. Coal and oil accounted for 43 percent of railway volume, and 52 percent of water transport directly controlled by the Ministry of Communications.

The volume of energy resources transported was quite large, because of their uneven geographical distribution in our country. Coal and petroleum production is concentrated in the west and the north, while in the 10 provinces south of the Yangzi River, where the population amounts to 41.5 percent and the industrial output amounts to 43.9 percent of the national totals, the production of coal amounts to only 17.[illegible] percent, while the production of crude oil amounts to only 1.4 percent. That is why for a long time, coal has been transported from the north to the south and from the west to the east, while oil had to be transported from the north to the south. In other words, the coal required in Eastern China, the northeast, and the central-south has to come from northern China, the northwest and the southwest over long distances and in huge amounts.

(6) Harbor traffic. The increase of harbor traffic has also been rapid. In 1950, traffic along the coast and the Changjiang River was 13.84 million tons (8.29 million tons for harbors and 5.55 million tons for the Changjiang River). In 1980, it was increased to 306.86 million tons (217.31 million tons for the harbors and 89.55 million tons for the Changjiang River), an increase of 21.2 times. Among the cargoes handled in the harbors, coal, petroleum and mineral products accounted for two-thirds and foreign trade materials accounted for one-third of the total.

(V) Transport Efficiency and Main Economic Indices

The several main indices of transport efficiency in 1980 compared with those of 1950 are as follows:

Indices	Unit	1950	1979	19
Time for railway cargo turnover	days	3.[illegible]	3.00	3.
Daily production of each freight locomotive	10,000 ton/ kilometer	43.4 (1952)	72.3	72.
Annual output by water transport enterprises under Ministry of Communications	ton/ kilometer	29066 (1952)	39447	414
Time for ships to remain in main coastal ports	day	3.0 (1957)	3.1	2.
for foreign ships	day	4.0	8.2	7.
Annual production of each truck of highway transport departments	ton/ kilometer	6424	43600	3938

In 1980, all transport departments paid great attention to the improvement business management. The railway departments strengthened their planned an balanced transportation by strictly adhering to their operational schedule streamlining the procedures of transportation, and increasing the safety f tor. The speed of freight trains was increased to 28.7 kilometers per hou being slightly higher than that in 1979. Cargoes were kept 13.1 hours bef loading, a reduction of 0.2 hours. The rate of on-time departures for pas ger and cargo trains was 94.2 percent and 91.7 percent respectively, a ris 1.3 percent and 2.3 percent respectively.

In 1980, ships had to remain in the principal coastal ports for 2.9 days, reduction of 0.2 days, and foreign ships had to remain for 7.7 days, a redu tion of 0.5 days compared with 1979.

In 1980, the annual production of each truck under the highway transport de ments was reduced by 9.7 percent, because in recent years, many vehicles be ing to the enterprises have joined in serving public transportation, thus r ing the traffic for the highway transport departments.

(VI) Joint Transport and Containerized Transport

Soon after the founding of the People's Republic, transport and business o were established in the large and medium-size cities of our country to hand transportation on behalf of cargo owners in various forms, including trans ment and delivery. In recent years, along with the national economic deve ment, through transportation has taken a big step forward. In 1980, more 48 million tons of materials were incorporated into the plans for through way and waterway transportation. This accounted for 4 percent of the tota railway traffic and 40 percent of the traffic for water transport directly trolled by the Ministry of Communications. Most of the railway stations a handling through railway and water trunk line transport. There are now [illegible] through water-land transport ports and 127 other ports handling through river-sea transport. In April 1980, the state approved a plan for through sea-land transport of coal from Yangquan to Qingdao and Shanghai, and the plan worked out very well. In recent years, various types of through transportation lines have been set up within or across different provinces and municipalities, and some of these provinces and municipalities have published the regulations of through transport. The through transport line for various finished products from Shanghai to the northeast via Dalian has been maintained for more than 10 years, and has helped the commercial departments reduce their circulation expenses by some 40 million yuan. Through transport services for passengers, mainly in selling passenger tickets have also been developed in 1980.

Containerized transport also made considerable progress in 1980. China has now 78,700 containers, a 25 percent increase over 1979. Container service is being handled by 178 railway stations and all the main ports along the coast and the Changjiang River. In 1980, the railways completed the transport of 2.03 million tons of containerized cargoes, a 108 percent increase over 1979. In the same year, 12,500 tons of containerized cargo, a 187 percent increase over 1979, were transported via waterways in the country. In the same year, the five coastal ports of Shanghai, Tianjin, Qingdao, Huangpu and Dalian handled 64,784 containers, a 76 percent increase, in international shipping. The motor vehicle departments also handled 1.03 million containers in door-to-door deliveries. In civil aviation, trial use of 1.5 ton small containers has been carried out on its domestic and international routes.

(VII) City Traffic

Passenger transportation is the key factor in city traffic. Among the 216 cities in our country, 202 of them have public transportation facilities, with a total length of 32,300 kilometers, and a total fleet of 32,000 vehicles of various types, including 16,000 public buses. Trackless cars developed rapidly after the 1960's, and by now, there are 3,300 such cars in 24 large and medium-sized cities. The former cars with tracks are being gradually phased out, and there are only 310 of them in 4 cities in the northeast. Passenger ferry service has also been inaugurated in some cities along the rivers. Furthermore, taxi service is now in vogue in 32 cities. In 1980, some 17.8 billion passengers were carried by public transportation.

In addition to public transportation, the number of other motor cars have increased rapidly in the cities. In Beijing, for example, there are now 170,000 civilian motor vehicles (including trucks and passenger cars). Furthermore, the number of bicycles has sharply increased, and there are more than 3 million of them in Beijing and 2 million in Tianjin.

After liberation, the rapid development of socialist construction and the inadequate measures of population control led to a sharp increase of urban population. Now urban transportation has become one of the important problems of city construction and administration for the following reasons: First, the growth of the public transportation fleet cannot keep pace with the fast growing demand for passenger transport. These vehicles are usually overcrowded with serious problems of overloading and disorderliness, particularly during the peak hours when workers are coming on or going off duty. Second, most of the city roads, other than those newly built according to plans, have been left over from the past. They are narrow and in disrepair with only level crossings (only a small number of multi-layer crossings are available in Beijing) and a poor traffic signal system. These conditions account for the low traffic capacity, low driving speed and the high accident rate. The solution of these problems require coordinated efforts from various quarters in reconditioning the main city roads by suitably raising their standards, widening them, and by comprehensive planning. At the same time, traffic control should be strengthened and the system of traffic signals should be improved.

The first subway in China was built in Beijing. The length of this subway during the first stage of construction was 23 kilometers long with 17 stations, a designed speed of 80 kilometers per hour, and a system of automatic block signals and central control. At peak hours, there is only a 1.5 minute interval between departures. Business operation of the subway formally began in 1973. By 1980, it has carried a total number of 53.2 million passengers. The second stage of construction is now proceeding for a round-the-city line.

(VIII) Three Outstanding Problems

Great achievements have been won on the communications and transportation front in the 31 years since the birth of New China, as already pointed out. For various reasons, however, it has for many years failed to meet the demands of national economic development in which it has apparently become a weak link. At present, there are three outstanding problems.

(1) Heavy strain on the capacity of the main railway sections. In the past 31 years, railway freight turnover has increased by 30.07 times, but the operational mileage of railways has increased by only 1.36 times; the number of locomotives increased by 1.5 times; and the rolling stock increased by 4.7 times. The increase of carrying capacity is now far behind the increase of traffic, resulting in the existence of more than 10 limited zones along the main trunk lines. Only 50-70 percent of the traffic can pass through these bottlenecks.

The main cause of the strain on the capacity is that for some time, investment has been insufficient. Even the small available investment was not rationally used, because we overstressed the building of new lines in the inland and neglected the renovation of the old lines along the coast. The population in the northeast and the coastal areas amount to 77 percent of the entire population, and the volume of railway freight traffic amounts to 80 percent of the national total. Yet, from 1950 to 1978, the investment in the transformation of the old lines amounted to only 20.2 percent (further lowered to 10 percent in the past 10 years or more) of the total investment. This further increased the strain on the old lines along the coast. Worse still, the investment had very poor economic returns. The cost of constructing each kilometer of new line has increased from 50-60 yuan in the 1950's to more than 200 yuan. There has been great waste as a result of inefficient engineering management.

The railway capacity is not fully utilized for coal transport, even though 67 percent of the whole national coal output has to rely on railway transport. Because of the tight energy supply in our country in recent years, Eastern China, the northeast and the central-south do not have enough coal supply and the development of their production has been hampered to a certain extent. Apart from the insufficient output from the coal mines, the shortage of coal is also attributed to inadequate transport facilities.

In 1980, concentrated efforts were made to improve the limited zones, and the ratio of investment in old and new is now 1.6:1. In the same year, the new double-track lines were increased by 151.6 kilometers, and the electrified lines were increased by 642 kilometers. This has been a positive help to coal transport, and in 1980, coal transported out of Shanxi Province exceeded 70 million tons, an increase of more than 10 million tons over 1979. However, this was still not enough for the demand, and the shortfall in 1971 was even more serious. In recent years, planning for railway construction continued to center around coal transport and technical transformation in the limited zones mainly with such measures as double tracks or electrification, or with both of these measures being attended to at the same time. Meanwhile, more locomotives had to be built in order to strengthen the organization of transportation.

(2) Berthing facilities are very scarce in the main coastal ports. At present, the situation of harbors being congested with ships and cargoes is rather serious. This has been caused by our long "self-imposed blockade" in the past and our neglect in harbor construction. Poor planning and business management had also been the contributory causes. In the 31 years since the founding of the People's Republic, harbor traffic has increased by 25.2 times, but the coastline with wharves has only been doubled and the number of deep-water berths approximately trebled. At present, the pressure on our berths is the heaviest in the world, and the actual traffic for our 15 coastal harbors has exceeded their normal capacity by 16 percent. Despite every effort made to cope with the excessive traffic, we still find ourselves in a passive position. Foreign ships had to remain in the harbor for an average of 8.2 days in 1979 and 7.7 days in 1980. In the harbor of Shanghai, there were always over 100 foreign ships berthing, sometimes for several weeks. It is estimated that in 1980, as much as 0.2 billion was lost in demurrage.

In 1980, 12 berths were constructed and in operation in 1980, and the traffic capacity was increased by 6.03 million tons. There are still some coal wharves, container wharves, and mineral ore wharves under construction. Despite the increased capacity from these projects, the shortfall is still considerable for the reason that our problems have accumulated over a long time.

(3) Transportation capacity for passengers is also quite inadequate. In the past 31 years, passenger traffic in our country has increased 24 times, and the passenger turnover increased by 14 times. Passenger transport by both land and water sharply increased in the later half of 1980. In the past 30 years, however, the number of our passenger railway cars was increased only nearly 3 times; that of passenger seats on ships had been only trebled; and that of passenger vehicles on the highways increased by 12 times. These increases are evidently inadequate, and serious overloading of vehicles or ships has been the result.

There is also serious overcrowding in the harbors, and difficulty in maintaining order. For passengers, buying tickets, boarding the vehicles, food and lodging, sanitary conditions and security have all become problems. In our country, 41 passenger railway terminals have already reached the saturation point, and on 25 main trunk lines, it is very difficult to increase any passenger car. In 1980, 1,000 passenger cars were added to the rolling stock and 1,000 passenger buses were also added on the highways. These additions were so small that little alleviation could be expected. Even such urgent measures as the replacement of passenger cars with boxcars, remodeling some ships to carry more passengers, adding more scheduled runs, and the introduction of night runs on the highways failed to meet the demand.

(IX) Outlook

In the national economy, communications and transportation now belong to the "short line" and must therefore be quickly developed in order to catch up with the national economic development. At the same time, the proportionate relationship between various forms of transportation within the communications and transportation sector, and between various sections within each form of transportation should be well adjusted so as to form an effective comprehensive transport system in which all sections will work in harmony. In addition to meeting the present transportation requirements, a certain reserve force should be maintained so that communications and transportation can serve as a vanguard in the entire national economy.

(1) Pay attention to construction and expand the transport capacity. In 1980, the intensity of our freight traffic reached 11.99 million converted tons and ranked second in the world. The average amount of traffic handled by each of our berths along the coast was also the highest in the world. Hereafter, we cannot afford to relax our efforts in tapping the potential of the existing equipment, but the main way to solve these problems is to increase the capacity with new projects.

The construction periods for railways and harbors are long. According to past experiences, they generally required 5-8 years. Even the transformation of old tracks or old berths required 3-5 years or more. Therefore, these tasks should be taken care of well in advance under a unified plan in the national economy.

Investment in recent years mainly aims at strengthening technical transformation in the limited zones and the increase of berths and passenger transport equipment. Since the scope of construction cannot be quite large in view of the limited financial and material resources at the state's disposal, the investment should be used first in meeting the most urgent needs. We should attach great importance to the economic results of construction and carefully guard against blindly started projects or duplicated construction. We should have a unified plan for the construction of all forms of transportation, including land, water and air transport, and of harbors and terminals, so that they can all combine to form a comprehensive productive capacity.

(2) Adjust the structure of transportation and bring into play the strong points of various forms of transportation for the purpose of comprehensive

utilization. Railway occupies the leading position in our transport system, particularly in large-scale cargo-hauling over long and medium distances. The operating cost of railway transportation is less, its energy consumption is lower, and its service is fast. But it requires heavy investment and a long construction period, and its construction is by no means simple. We have more than 5,800 natural rivers totaling 430,000 kilometers in length, and a coast line of more than 18,000 kilometers. These conditions are favorable for water transport. The operating cost of water transport and its energy consumption are low. Yet for various reasons, we failed to take full advantage of these strong points, and in 1979, the navigable mileage of our inland rivers was reduced by one-third. This is a major setback. At present, our freight traffic on inland waterways is generally lower than those of advanced countries, but its potential is still large. The urgent task of the moment is to adopt the necessary measures and to create the necessary conditions for the strong points of the Changjiang River, the Zhujiang River, the Grand Canal, and the coastline to be given full play. Under ordinary conditions, all cargoes suitable for the waterways should be transported over water. For example, part of the cargoes transported over water. For example, part of the cargoes transported on the Beijing-Guangzhou Railway and the Tianjin-Shanghai Railway can be transported by sea, while the Huaihe River and the Grand Canal running between the north and the south can share part of the coal transport to Yangzhou and Xuzhou; and the Xijiang River, after certain improvement, can provide a new route for coal transport to Guangdong and Guangxi.

At present, the railway is undertaking too many short-distance hauls. According to statistics, 23 percent of the railway cargoes are over a distance of less than 100 kilometers, and 14 percent are hauled for less than 50 kilometers. These short-distance hauls have added a great deal to the workload of the railway stations, and increased the operating costs. From the standpoint of comprehensive utilization and overall planning, part of these short-distance hauls should be transferred to the highways and waterways. The present transport capacity of highways is more than enough, and the same situation exists in local water transport. If the loads can be rationally distributed, we can kill two birds with one stone. Therefore, we should have a unified plan, readjust certain policies, actively improve our highways and waterways, and make some necessary changes in the scale of transportation charges in particular. At present, the charges for short-distance hauls by railway is only one-seventeenth of highway transportation charges and is below the operating cost. Some adjustment should be made to reduce the difference. Furthermore, highway transportation offers door-to-door delivery service (while railway cargoes are usually overcarried or shortcarried), and can certainly attract part of the cargo load from railways.

Local railways also have a certain role to play. According to our system of management, local railways are built, controlled and used by the local departments. They first made their appearance in 1958, and by now, the total mileage open to traffic has reached 3,381 kilometers. The construction cost of local railways is approximately one-sixth of that of the major lines, and the average transporting cost is only 0.65-0.7 yuan per ton/kilometer. They are more flexible than the major lines and can make use of the old steel rails or old equipment and materials salvaged from the major lines. Provided local conditions permit, more local railways should be built.

There is a fairly good future for pipeline transport. In addition to crude oil, pipeline transport for finished products can be developed. Civil aviation should be developed gradually to share the passenger load over long distances.

(3) Improve the business management and tap the potential of existing equipment. The state-run communications and transportation trades now owns fixed assets totaling more than 80 billion yuan. These assets are now mainly relied on for the completion of our transportation tasks. In order to control them effectively and use them fruitfully, we should strengthen political and ideological work, learn the scientific methods of production management, and study the adoption of suitable technical policies. The problems in the present system of management should be gradually solved in the process of the national economic readjustment.

Furthermore, there are many units and organizations under the system of collective ownership having their own motor vehicles, animal-drawn carts and sailboats for transportation, and their own loading and unloading equipment. According to our national conditions, we whould continue to bring into play the role of the transportation enterprises owned by the collectives as a supplement to the state-run transportation enterprises. We should also help them solve the present problems with the sources of cargoes, funds and fuel.

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RAILWAY TRANSPORT NETWORK, CONSTRUCTION DETAILED

Beijing 1981 ZHONGGUO JINGJI NIANJIAN [1981 ALMANAC OF CHINA'S ECONOMY] in Chinese pp IV 105-109

[Article by the Staff Office of the Ministry of Railways: "China's Railway Transport"]

[Text] Railway transport has undergone great development since the founding of the People's Republic, and the backward situation of Old China, characterized by the small number, poor quality and uneven geographical distribution of railways has been initially changed. In the 30 years from 1949 to 1979, the length of railways open to traffic was increased from 22,000 kilometers to more than 51,000 kilometers (not including Taiwan. Same as follows), an increase of 1.4 times. In Old China, six provinces and regions, namely, Xizang, Xinjiang, Qinghai, Ningxia, Sichuan and Fujian, were inaccessible by railway. Now, with the exception of Xizang, they are all open to railway transport. The layout of the railway network has also been improved. In 1950, the railways west of the Beijing-Guangzhou line amounted to only 19.5 percent of the total railway mileage; in 1979, the proportion was raised to 45.3 percent, and the former situation of overconcentration in the northeast and the eastern coastal areas in Old China has been initially changed. Technical equipment for railways has also been improved; the length of double-track lines has been increased from 866 kilometers to 8,221 kilometers, an 8.5 time increase; and electrified lines have been built from scratch. In 1979, there were already 1,031 kilometers of electrified lines; and the length of automatic block signal lines was increased from some 1,100 kilometers to nearly 6,000 kilometers. Compared with 1949, the number of locomotives in 1979 increased by 1.5 times; that of passenger coaches, increased by 3 times; and that of freight wagons, increased by 4.7 times. The railway industry has gradually developed from the stage of repairing and assembling before liberation to a fairly complete system of repairing and manufacturing trains and producing spare parts. In addition to manufacturing steam locomotive and ordinary passenger coaches, freight wagons and special railway equipment, we are now able to undertake the serial production of internal combustion locomotives, electric locomotives, large freight wagons and plush passenger coaches. Besides meeting the requirements of railways and the industrial and mining enterprises at home, we are also exporting these products abroad. Railway traffic of both passengers and cargoes has continued to increase. In 1979, the volume of passenger traffic increased from 102.97 million in 1949 to 856.11 million passengers, representing a 7 time increase. In 1979, freight traffic had also increased from

55.89 million to 1.09 billion tons, an increase of 18.6 times. In the national transportation system, passenger railway transport has all along taken the lead. It has contributed to our economic and national defense construction and helped improve people's living conditions.

In 1980, the railway transportation sector continued to implement the policy of readjustment, restructuring, reorganization, and upgrading. It won outstanding achievements in railway transport, industrial production and capital construction.

1. Railway Transport

In 1980, more than 910 passengers, an increase of 56.35 million or a 6.6 percent increase over the 1979 figure, were carried over the national railway system. This was the largest number of railway passengers ever carried. The passenger turnover was 138.3 billion passenger/kilometers, a 13.7 percent increase over the previous year. In view of the ever-increasing passenger traffic, the railway departments have adopted such measures as increasing the schedule of passenger trains, expanding the space in trains for passenger accommodation, and other marshalling arrangements for increasing the passenger carrying capacity.

to cope with the increase of passenger traffic on festive occasions, special runs are added to supplement the regular scheduled runs, especially during the traditional festivals of the Chinese people, such as the days before and after the Spring Festival. On each of these days, more than 300 special runs were made throughout the system. At present, with the exception of Xizang, all provinces, municipalities and autonomous regions are directly linked with Beijing by express passenger lines, while from Shanghai, Tianjin, Guangzhou, Shenyang, Harbin, Wuhan, Zhengzhou and the other large cities, there are scores of departures of passenger trains bound for, or transitting Beijing each day. Thus a passenger network spreading out in all directions with Beijing as the hub has been formed for the convenience of the broad masses and the development of tourism. Along with the large-scale increase of passenger transport, the service of the personnel aboard passenger trains has also continued to improve. In the railway stations of large cities, railway tickets can be bought by phone calls. These tickets can also be bought in advance and delivered to the purchasers' homes. The transportation of unaccompanied cargoes, the procedures of claiming them, the catering service and the sanitary conditions have all been improved. At present, internal combustion locomotives and electric locomotives are being used on passenger trains on the Beijing-Guangzhou, Beijing-Shanghai, Beijing-Shenyang, Harbin-Dalian, Shanghai-Hangzhou, Baoji-Chengdu, and other trunk lines. Conditions of travel for the passengers have been improved; the time of train rides has been shortened; and the turnaround of passenger trains is now faster. A trip from Beijing to Shanghai aboard Trip No 13/14 Special Express takes only 18:58 hours, at an average speed of 77 kilometers per hour. A trip from Beijing to Shenyang aboard Trip No 11/12 Special Express can now be made in 8:55 hours, at an average speed of 94 kilometers per hour. This is the fastest train in the entire system. The passenger trains on Trip No 13/14 from Beijing to Shanghai and the trips between Guangzhou and Shenzheng are now air conditioned.

Railway freight traffic in 1980 reached 1.08 billion tons, a reduction of 0.8 percent below that of 1979 which was the highest in history. This reduction was mainly due to the national economic readjustment calling for a reduction of capital construction projects and reduced consumption of energy and raw and semifinished materials. The change in the composition of freight traffic with the load of mineral building materials and metallurgical materials reduced below the 1979 level was also one of the causes. However, coal transport in 1980 was increased by 0.4 percent over 1979, and reached the highest level ever attained. Because of efficient transportation, coal can be promptly transported out of the mines. At the same time, more than 0.8 million tons of leftover coal were cleared away from the mine sites. The quantities of cement and timber transported in 1980 were also increased by 8.1 percent and 7.2 percent respectively over 1979. To comply with the requirements of the national economic readjustment, the railway departments paid particular attention to the transportation of materials for the light and textile industries and agricultural products, and gave them priority in receiving, loading and transporting. The total volume of these materials and products transported in 1980 increased by 7.8 percent over 1979. In the same year, the ratio of long-distance hauls was increased. Thus even though the quantity of cargoes was reduced, the cargo turnover actually increased. The total cargo turnover in 1980 was 571.7 million tons/kilometer, a 2.1 percent increase over 1979.

In 1980, there were throughout the whole system 4,630 cargo handling stations; 59 percent of them were equipped with cargo lines and cargo platforms, and 70 percent had cargo warehouses and were able to handle whole train loads in addition to small separate lots. There were also 11,264 sets of loading and unloading machines, and the work of loading and unloading was 46 percent mechanized. Container transport has also been developed. In 1980, there were more than 75,000 containers totaling 2,035,000 tons, doubling the quantity of 1979, and amounting to 10 percent of the total volume of cargoes transported in small separate lots. There were also 178 train stations handling the receiving and dispatching of containers.

Because of the change in the composition of freight traffic, the rise in the ratio of long-distance hauls and the increase of workload for some sections and marshaling yards have added to the difficulties of transportation. In view of this, the broad masses of workers and staff members have made great efforts in tapping potential and raising efficiency. In addition to the various quantitative targets, they also fulfilled the technical and economic indices. The turnaround time for freight trains was 3.02 days, which was within the scheduled time limit. The average layover time for a freight train was 13.1 hours, a reduction of 0.2 hours compared with 1979. The average time for the transfer of loads in transshipments was 3.6 hours, the same length of time as required in 1979. The speed of freight trains was maintained at 28.7 kilometers per hour, an increase of 0.1 kilometers per hour over 1979. The freight locomotives covered a distance of 415 kilometers daily, an increase of 3 kilometers over 1979 and the daily output of each locomotive was 723,000 tons/kilometers. The departures of passenger trains were 99.3 percent on-time, and the operation as a whole was 94.2 percent on schedule, being 0.2 percent and 1.3 percent respectively higher than in 1979. The departures of freight trains were 93.6 percent on-time, and their operation was 91.7 percent on schedule, being 0.8 percent and 2.3 percent respectively higher than in 1979.

The safety factor was increased in 1980. The number of major accidents throughout the system in the whole year was lower than in 1979 by 38.6 percent. It was the year of the least accidents since 1965. Freight transport accidents was lower than in 1979 by 19.3 percent, and the compensation rate for every 10,000 yuan in freight transport was reduced by 50.9 percent compared with 1979.

In 1980, the broad masses of workers and staff members in the engine departments launched a campaign for safe and on-schedule operation, for increased towing capacity and speed, and for fine work quality and lower energy and raw material consumption. The consumption of coal and fuel by locomotives was further lowered. Coal consumption by steam locomotives for every 10,000 ton/kilometer was 106.4 kilograms, a reduction of 3.1 kilograms below 1979. In the entire system, 80 percent of the steam locomotives accomplished the task of coal conservation. Internal combustion locomotives consumed 35 kilometers of oil for every 10,000 ton/kilometer, a reduction of 0.7 kilograms. In the whole system, 40 internal combustion engineering sections accomplished the task of oil conservation. Electric locomotives consumed 129.8 kwh of electricity for every 10,000 ton/kilometer, a reduction of 12.2 kwh below the planned amount. A total of more than 20 million kwh of electricity was saved. All the electrical engineering sections accomplished their task of electricity conservation.

A major overhaul involving the replacement of 2,581 kilometers of rails was carried out in 1980. This was the year with the largest scale of rail-replacement. Repairs were also carried out on 3,175 kilometers of the lines and more than 3.9 million reinforced concrete ties were replaced. Since the production and laying of concrete ties for our railways in 1956, a total of 50 million ties were laid throughout the system. The Model 69 reinforced concrete ties produced by the Fengtai Bridge Building Plant won a silver national medal in 1980. In the same year, 749 kilometers, being 111 kilometers more than in 1979, of seamless track was laid. Since 1957 when the seamless track was first used, a total of 7,900 kilometers of it has been laid.

In 1980, the automatic block signaling system was installed in the Madian-Guangshui, the Zhangzhou-Anyang and the Jinshou-Masandian zones; electric marshaling was in operation in 20 railway stations, including those in Fengxi, Tangshan and Nanxiang; and major repairs and technical transformation were carried out on the electric marshaling yards of the Xian-Baoji and two other sections. Some 658 kilometers of underground long-distance cables were laid, and 657 kilometers of overhead cables were checked or replaced.

In 1980, 444 sets of locomotive signal equipment and automatic alarm equipment were installed in 1,288 locomotives. At the same time, surface equipment for an alarm system was installed in 974 stations.

2. Railway Capital Construction

The focus of railway capital construction in 1980 was on the technical transformation of the existing railways and the investment in such projects amounts to more than 40 percent of the total capital construction investment for the entire railway system. There were 24 large and medium-size technical transformation projects in the system mainly concerning the problem of insufficient capacity for transporting coal out of Shanxi and for traffic along the lines between the coastal ports and in the southwest and northwest areas. New double-track lines were laid in the eastern section of the Longhai Line, the Gaozhou-Jinan Line, the Shijiazhuang-Dezhou Line, the Tianjin-Pukou Line, the western section of the Beijing-Baotou Line, and the southern section of the Beijing-Guangzhou Line; and electrified railways were repaired or built along the Shijiazhuang-Taiyuan Line, the Siangfan-Chongqing Line, the western section of the Longhai Line and the eastern section of the Beijing-Baotou Line. The railway hubs at Beijing and Zhengzhou were further expanded. In 1980, 10 technical transformation projects or 41.7 percent of the construction projects on the operating railways were completely or partially put to use. This was the year with the best investment returns.

The completed capital construction projects included: 33.08 million cubic meters of stone and earthwork for the track foundations; 17,000 meters of tunnels; 17,000 meters of large and medium-size bridges; 277 kilometers of rails laid for new main lines; 386 kilometers of rails laid for new double-track main lines; 502.1 kilometers of rails laid for station lines; and 3.45 million square meters of floorspace completed for buildings. In the same year, 1,007.9 kilometers of new lines and 158.4 kilometers of double-track lines were completed and available for operation. Also, 642.6 kilometers of electrified lines are now open to traffic.

The three lines (sections) of electrified railways completed and available for operation in 1980 were: (1) The eastern section of Xiangfan-Chongqing Line (from Xiangfan to Ankang), the third electrified railway in our country with a total length of 372 kilometers. Work on this line began in 1975, and was completed and ready for operation in October 1980. The topography of this area is complex, and nearly half of the whole length of the line has to go through tunnels and over bridges. Completion of the electrification has greatly increased the transportation capacity. (2) The Shijiazhuang-Yangquan section of the Shijiazhuang-Taiyuan Line. This is China's first electrified double-track railway of 119 kilometers. Work began in 1974, and was completed and handed over for use in September 1980. Transport capacity has since been more than doubled, thus helping expedite the transportation of coal out of Shanxi. (3) The Baoji-Tianshi section of 151.6 kilometers of the Longhai Line. This is the most difficult section of the whole line. Work on its electrification began in January 1977 and was completed in December 1980.

The newly built double-track lines were: The Zhengzhou-Xuzhou section of the Longhai Line, with 187.5 kilometers already completed and in operation; the Datong Baotou section of the Beijing-Baotou Line, with 123.8 kilometers already completed and in operation; the Shijiazhuang-Dezhou double track line, of which 126.5 kilometers have been laid and 100.8 kilometers have been completed and is in operation; the Jiaozhou-Jinan double track line with a total length of 74.9 kilometers; and the double-track section of the Beijing-Guangzhou Line, for which designs for the bridges and tunnels are in progress in addition to the other preparatory work. Apart from these, the railway intersections Zhengzhou, Beijing and Jinan are undergoing transformation, and part of the engineering projects has been completed and are ready for operation.

3. Repair and Construction of Railway Rolling Stock

In 1980, the plants of the railway rolling stock industrial system fulfilled or overfulfilled all the plans for repairing and manufacturing various locomotives, passenger coaches, freight wagons and cranes, to insure that all the requirements for railway transport would be met. The numbers of newly built steam locomotives, passenger coaches and freight wagons increased by 10 percent, 17.1 percent and 3 percent over 1979 respectively. The production of electric locomotives was maintained at the same level as in 1979. The total output value for that year was 1.6 billion yuan. After fulfilling all state plans, these plants also opened new avenues of production by accepting repairing and manufacturing jobs on locomotives and rolling stock outside the national system. Compared with 1979, the quality of various products showed improvements in varying degrees in 1980, and the production costs were decreased. The 25.5-meter air conditioned and upholstered passenger coaches, manufactured by the Sifang Locomotive and Rolling Stock Plant, are already in use on the express trains on the Guangzhou-Kowloon and Beijing-Shanghai runs. The structure of these coaches is good for a speed of 160 kilometers per hour. They are safe, steady and attractive in appearance. Each carriage can accommodate 68 persons; the seats can be turned to any direction, and the backs can be adjusted by 18.5 degrees, 29 degrees or 39 degrees for the passenger's comfort. In summer with an outdoor temperature of 35 degrees Centigrade, temperature inside the car can be maintained at 24-28 degrees Centigrade; and in winter with an outdoor temperature of minus 12 degrees Centigrade, temperature inside the car can be maintained above 18 degrees Centigrade.

The serial production of Model B19 refrigerator wagon sets has begun in the Wuchang Rolling Stock Plant. Each set consists of five wagons, including four freight wagons and one power generator wagon. Each freight wagon weighs 39 tons and carries 40 tons of load. They are all equipped with devices for five different functions, namely, raising the temperature, lowering the temperature, defreezing, maintaining the temperature at a constant level and ventilation. All these functions can be controlled either centrally or separately. When the outdoor temperature reaches 40 degrees Centigrade, the minimum temperature inside an empty wagon can be lowered to minus 18 degrees Centigrade; when the outdoor temperature is as low as minus 45 degrees Centigrade, the heaters inside the car can raise it to 15 degrees centigrade.

Among the fine-quality products are the exciters produced by the Yongji Plant; the 500 ampere high-efficiency silicon elements produced by the Dalian Plant; the hydraulic torque converters produced by the Sifang Plant; and the 25.5-meter restaurant cars produced by the Puzhen Plant.

4. Railway Technology

Implementation of the party's policy on intellectuals has greatly inspired the technicians and speeded up the progress of railway scientific research. In 1980, 43 scientific and technical achievements were evaluated at the ministerial level; 32 of them were given awards, and two scientific research achievements were given new invention rewards. The main achievements were:

test platform for large internal combustion locomotives. This was the result of combined efforts from the Dalian Internal Combustion Locomotive Research Institute, the Dalian Locomotive and Rolling Stock Plant, the Beijing No 27 Locomotive Plant and the Zhuzhou Electric Locomotive Plant. Electronic computers were used for testing and disposition of numerical data. Its functions are fairly comprehensive and the degree of automation is fairly high. By using electronic computers for testing and disposition of numerical data, we can determine the mechanical performances, the heat effects and the braking power of various types of internal combustion locomotives running at 0-200 kilometers per hour on rails with a gauge of 1,000-1,670 millimeters at simulated high temperature or high elevations. This is an important testing method for improving the performances and quality of our internal combustion locomotives, and won a second-class ministerial award for achievement in scientific research.

The Chichihar Rolling Stock Plant successfully completed its research on Model DNY 1002 internal combustion rail-lifting machine, capable of lifting 100 tons, and faster than the steam lifting machines in action. It is warmly received by the consumers because of its high speed in rescue operations.

In collaboration with the relevant design and research departments, the Bridge and Tie Plant has trial produced concrete spring fasteners and prestressed concrete switch ties which, after evaluation, is now in serial production.

The automatic control system, manufactured by the Communications and Signal Company, for subway operation; the JPZ model locomotive signal system--which is close to the continual operation type--produced by the Railway Scientific Research Academy; the ZTL-1 Model automatic stop device for locomotives; and the DY-1 Model remote communications equipment for large stations have all played their roles in improving the organization of transportation and conditions of labor, raising transport efficiency and insuring safety in operation.

5. Structure in Railway System

By the end of 1980, a total of 20 railways bureaus had been established in different parts of the country according to the workload involved and in consideration of the demarcation of administrative regions. These bureaus are located in Chichihar, Harbin, Jilin, Shenyang, Jinshou, Beijing, Hohhot, Taiyuan, Zhengzhou, Wuhan, Jinan, Shanghai, Nanchang, Guangzhou, Liuzhou, Chengdu, Xian, Langzhou, Ulumuqi, and Kunming. Under each railway bureau, a certain number of branch bureaus or offices are established according to the traffic conditions. There are now altogether 60 branch bureaus and 3 offices in the system. Each of the railway bureaus also has under it a certain number of special sections, according to the transportation requirements. At the end of 1980, there were 167 engineering sections, 116 rolling stock sections, 235 construction sections, 176 electric sections and 65 train sections in the national system.

There are 68 directly affiliated railway plants, including 33 locomotive, rolling stock machinery and electrical machinery plants; 10 bridge and tie plants; 4 engineering and loading-unloading machinery plants; 9 communications, signal and electrical appliance and material plants; 8 antirot plants; and 4 construction materials and accessory plants. They are responsible for repairing and manufacturing locomotives, rolling stock and various types of equipment in the system.

There are nine engineering bureaus for railway capital construction. They are the First, Second, Third, Fourth and Fifth Engineering Bureaus, the Plant Construction Bureau, the Electrification Bureau, the Tunnel Bureau and the Bridge Engineering Bureau. The five design academies are: The First, Second, Third and Fourth Prospecting, Surveying and Designing Academies and the Special Design Academy. The engineering bureaus and the design academies undertakes the tasks of designing and construction.

There are seven material control sections, responsible for the supply of transportation, industrial and construction materials.

There are eight academies and institutes, namely the Railway Science Research Academy, the Railway Planning Academy, the Dalian Internal Combustion Locomotive Research Institute, the Sifang Rolling Stock Research Institute, the Qishuyan Locomotive and Rolling Stock Technology Research Institute, the Zhuzhou Electric Locomotive Research Institute, the Labor Hygiene Research Institute and the Wuhan Engineering Machinery Research Institute.

There are eight universities and vocational colleges, namely, the Northwest and the Southwest Communications Universities, the Shanghai, Dalian, Lanzhou and Changsha Railway Colleges and the Nanjing and Shanghai Railway Medical Colleges. The Huadong Communications University and the Suzhou, Xian Railway Teachers Training Colleges are now in the stage of preparatory construction.

There are in the whole system 41 secondary vocational schools, 32 technical schools and 1,527 secondary and elementary railway schools throughout the system.

China has a huge area and rich natural resources. However these resources are not evenly distributed; the plants are mostly in the coastal areas; and the extraction and tunneling industries and the processing industry are far apart from each other. Since the capacity of aviation and highway transport is still inadequate, the transportation of passengers and long-distance cargo hauls are mainly undertaken by the railways. Of the total turnover undertaken by the modern means of transportation in our country, the volume of passenger and cargo transport by trains amounts to quite a large portion. Therefore, railway transport occupies a leading position in our modernization drive. With its small fleet, backward technological equipment and uneven geographical distribution at present, railway transport is still a weak link in the development of industrial and agricultural production. To meet the requirements of the four modernization, railway transport facilities should be greatly increased.

At present, the pressure on the old lines along the coast is very heavy, and the main trunk lines are being overstrained. This is the principal contradiction in railway transport. Hereafter, the major portion of railway traffic will be concentrated along the coast and in the northeastern areas. Therefore, for some time to come, we should concentrate our resources on strengthening the transformation of the old lines and appropriately constructing new lines and then coordinate the transformation of old lines with the building of new ones.

To increase our transport capacity, we should at the present stage pay attention to the tapping of transport potential and raising transport efficiency. In the long run, the basic method to increase transport capacity is to build new lines and to strengthen the technical transformation of old lines. But this requires both time and money. Therefore, the way to ease the immediate pressure on transportation is to mobilize the masses to tap the potential of existing lines and to raise transport efficiency. We should step up our organizational work, adhere to the transportation plans, maintain a balanced transportation, and handle more traffic at night. Every effort should be made, particularly in the sections now experiencing difficulties, to make full use of the existing capacity in meeting the demand from various quarters for railway transport. We should actively utilize the lines already built, such as the Sha-Tong Line, the Xin-Tai Line, the Jiao-Zhi Line, the Zhi-Liu Line, the Xiang-Qian Line, the Gou-Hai Line, and the Jing-Yuan Line, and organize branch lines in order to relieve the pressure on the Beijing-Guangzhou, Tianjin-Pukou, Beijing-Shenyang, Jiaozhou-Jinan and the Longhai railways.

As far as towing capacity is concerned, steam locomotives still play the main role in our present transport system, and the use of steam locomotives will have to continue for quite some time. However, the towing capacity of electric locomotives and internal combustion locomotives should also be developed.

The technical equipment for passenger coaches, freight wagons, bridges and the communications and signal system should also be modernized; the loading-unloading, road maintenance, repairs and construction should be mechanized; and the automation of both dispatching and traffic control should be developed. At the present stage, the transformation of technical equipment should mainly aim at increasing transport capacity, guaranteeing safe operation and improving the conditions of labor.

Passenger traffic is now continuing to increase, and many passenger trains are overloaded. The relationship between passenger and cargo traffic should be well adjusted. In the zones where passenger traffic is heavy, passenger cars should be increased to the maximum extent, and investment should be suitably increased to build more passenger cars in order to improve the passenger service. At the same time, passenger traffic in the suburbs of large cities should also be developed and the organization of passenger traffic should be raised to a higher level. The sense of responsibility in transportation should be cultivated; the control of loading, unloading and storage should be further improved; and the use of containers should be actively promoted. For coal, iron and steel, mineral and building materials, timbers and petroleum, which are usually transported in huge quantities, arrangement should be made for them to be transported straight to their destinations or for them to be transported in combined lots. The use of special trains should be gradually developed for this purpose. For poisonous materials, chemical industrial products, foodstuff, cement and perishable goods, special trains should be used if at all possible so as to insure safe operation and to reduce enroute losses.

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HIGHWAY QUALITY, TECHNICAL STANDARDS INCREASING

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[Article by Cheng Yinghua [4453 5391 5478] of the High Administration Bureau of the Ministry of Communications: "China's Highway Communications"]

[Text] Before the founding of the People's Republic, highway transport was very backward. At the time of liberation, there were only 80,000 kilometers of highways open to traffic, and most of them were distributed over the plains and hilly areas in the inland and along the coast. However, highways were almost nonexistent in the mountainous, frontier and national minority areas which form two-thirds of China's total area. After the founding of the People's Republic, highway construction developed rapidly, and by the end of 1980, the mileage of operational highways reached 870,000 kilometers, an increase of 9.9 times. At present, nearly all counties and more than 90 percent of the people's communes in the country are accessible by highways, and a highway network spreading out to cover various provinces, municipalities, and autonomous regions, with Beijing as the hub, and linking together large ports, railway centers and the vast countryside is now taking shape. Many remote mountainous areas, previously incommunicable, now have their highways. From 1950 to 1954, the Sichuan-Xizang Highway was built on the "roof of the world." Starting from Chengdu in Sichuan Province, this highway stretches out to Yaan, Ganze and Manigange and ends at Lhasa, the capital of Xizang Autonomous Region, after passing over the Erland, Zheduo and Que-er Mountains and crossing the Daduhe, Jingshajiang, Lancangjiang and Nujiang rivers. Its total length is more than 2,400 kilometers, and the average elevation is more than 3,000 meters above sea-level. This highway is the result of the most arduous engineering task in China's history of road building as well as a rare engineering feat in the world.

Along with the increase in number, the quality and technical standards of highways have also been greatly raised. Before liberation, most of the highways failed to meet any classification standard. The roadbeds were low and narrow, and there were not enough bridges and culverts, but many sharp turns and steep slopes. Now, more of the highways are up to the state's classification standards and approximately 73 percent of them are surfaced. The development of asphalt-surface roads has been particularly fast, and by the end of 1980, there were already 151,000 kilometers of asphalt roads, an increase of 505 times that of 315 kilometers available shortly after the founding of the People's

Republic. Class 1 roads have been built on the access routes to large and medium-size cities and between these cities. For example, the highway from Beijing to Miyun is 71.3 kilometers long, with a roadbed 25-28 meters wide, and a road surface 21-25 meters wide including a medial strip of 39.1 kilometers. the Shenyang-Fushun Highway is 27 kilometers long, with a roadbed 29 meters and a road surface 25 meters wide. It contains six lanes. The Nanjing Liuhe Highway is 24.7 kilometers long with a roadbed 23 meters wide, a median strip 1.5 meters wide and a road surface 10 meters wide on each side.

In the early 1950's, the building of highway bridges was also quite fast. In the past, most of China's bridges were built of wood and some were arch bridges of short spans built of stone. In places traversed by wide rivers, ferries were the only means of river crossing. Now there are more than 120,000 highway bridges in the country with a total length of more than 3 million meters, and 92 percent of them are permanent bridges. Even the Changjiang River, called a "natural chasm," is now spanned by a large bridge. The Chongqing Highway Bridge across the Changjiang River, which was completed and open for traffic on 1 July 1979, is 1,121 meters long and 21 meters wide. It is a prestressed concrete T-shape rigid frame bridge, with a main span of 174 meters. More than 30 bridges have been built across Huanghe River. Among them is the Luoyang Huanghe River Highway Bridge, 3,400 meters long, the longest highway bridge in China so far. In the scope of construction, the design and the technology, all these bridges are of a fairly advanced type.

In 1980, while strengthening road maintenance, the highway construction departments made great efforts in the technical transformation of the trunk lines of highways besides selectively building some new roads. The quality of road maintenance was improved and the technical standard of the trunk highways was raised by 6 percent over the previous year. A number of trunk highways, such as the highway from Hohhot to Wuyan via Baotou in Nei Monggol; the highway from Taiyuan to Yuanping via Xinxian in Shanxi Province; part of the Beijing-Fuzhou Highway in Zhejiang; the Fuzhou-Xiamen Highway in Fujian Province and many other access routes to large cities, were upgraded as second-class highways. In 1980, two trunk highways were completed and open to traffic: One of them, the Qinghai-Xinjiang Highway, starts from Chaka in Qinghai Province in the east and ends at Hetian in Xinjiang Autonomous Region in the west; and the other starts from Guanghua County and ends at Fangxian County in Hebei Province. Among the newly built independent highway bridges are: The Hanjiang River Highway Bridge in Guanghua County, Hubei Province; the Peijiang Bridge in Santai County of Sichuan Province; and the Dongjiang River Bridge in Huiyang County of Guangdong Province. In 1980, approximately 20,000 kilometers of county and commune highways were also built.

The continued increase of operational highways and the development of motor vehicle and petroleum industries have given an impetus to the development of motor vehicle transport. In 1949, there were in the whole country only some 50,000 motor vehicles. By the end of 1980, the number of civilian vehicles had already reached 1.78 million (including 1.3 million trucks, 0.11 million buses, and 0.14 million trailers), a 34.9-fold increase over 1949. There are 199,000 vehicles (including 159,000 trucks and 40,000 buses), approximately 11.2 percent of all civilian vehicles, are operated by the transportation departments. Vehicle transport service organs have now been established in almost all counties in the country, and more than 90 percent of the people's communes are providing the same service. Containerized highway transport has also begun in China, and suitable transport space has been reserved for this purpose. The largest load capacity of a single unit is 600 tons; the longest item that can be transported is over 70 meters.

In 1980, the highway transport departments handled more than 760 million tons of cargo. The turnover of highway freight reached 76.4 billion ton/kilometers (including 25.5 billion ton/kilometers for the highway departments), and that of highway passengers was 2.23 billion, averaging 6 million each day. The operation of highway department trucks was 86.5 percent perfect; their efficiency rate, 73.1 percent; the daily mileage, 172 kilometers; load capacity utilization rate, 61.5 percent; and a trailer of average tonnage can handle more than 39,000 ton/kilometers a year. All these figures are higher than those of the previous year.

Despite these great developments, highway construction and transport in China are still inadequate for the national economic development, in which they are now weak lines. In the process of national economic readjustment and restructuring, speeding up highway construction and increasing highway transport capacity is an important task.

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WATER TRANSPORT, RESCUE, SALVAGE ACTIVITIES EXPANDING

Beijing 1981 ZHONGGUO JINGJI NIANJINA [1981 ALMANAC OF CHINA'S ECONOMY] in Chinese pp IV 111-114

[Article by Sui Qiren [7131 0368 0088] of the Water Transport Bureau of the Ministry of Communications: "China's Water Transport"]

[Text] Natural conditions are very favorable for water transport in China. It has a long coastline, totaling more than 18,000 kilometers from north to south, some 900 lakes of various sizes and thousands of islands. Most of the sea areas, rivers and bays are unfrozen throughout the year and are suitable for harbor building. There are also many rivers with rich water resources and totaling 430,000 kilometers in length. According to a recent survey of the waterways, some 108,000 kilometers of them are navigable. The Changjiang River is the third longest river in the world, with a total length of more than 6,300 kilometers; and 2,958 kilometers of the main course are navigable throughout the year. The combined mileage of both the main course and the tributaries open to shipping total 18,000 kilometers. In the 31 years since liberation, there have been great developments for China's coastal, river and ocean shipping. In serving water transport, harbor wharves, navigation signs, ship repairs, harbor-machinery manufacturing, communications and navigation aids, rescue and salvage facilities have all been greatly improved.

1. Coastal and Inland Water Transport

There are two navigation zones, north and south, for China's coastal transport. The northern navigation zone is north of Xiamen up to the mouth of Yalujiang River; it is under the administration of the Shanghai Marine Transport Bureau. The southern navigation zone is south of Xiamen down to the mouth of Beicanghe River, under the administration of the Guangzhou Marine Transport Bureau. The section of Changjiang River from Chongqing to Shanghai is under the Changjiang Transport Bureau. In addition, all provinces (regions) located in the coastal areas or traverses by rivers have their own waterway (marine) transport bureaus mainly handling transportation matters within the provinces or collecting and distributing cargoes for the main lines. Shanghai serves as the center of marine transport, from which ships can sail to various coastal ports. Ships in the 10,000-ton class can sail into and moor in the Changjiang River. A navigation network embracing the rivers and the sea and the main courses and tributaries is gradually being formed.

Soon after liberation, there were only 23 ships totaling 34,000 tons left for coastal transport and 61 deep water berths at the coastal ports. Loading and unloading was carried out manually. The ships plying in the Changjiang River totaled less than 200,000 tons, and the harbors remained in their natural state. The ships sailing in inland waterways were mostly run-down sailboats built of wood. After more than 30 years' construction since the birth of New China, both marine and river transports have undergone great development. Coastal transport ships are much faster, and cargo ships are becoming bigger and more specialized. In recent years, the shipbuilding departments in the country have supplied a number of 25,000-ton bulk cargo ships and 24,000-ton oil tankers for the coastal fleet. The average load carried by ships under the Shanghai Marine Transport Bureau is some 9,000 tons above that of the early post-liberation period when the average load was only some 2,000 tons. There has also been great changes in river cargo transport. In 1949, 79 percent of the freight traffic was handled by wooden sailboats, mainly relying on paddling and manual dragging as the source of power. Now the number of steamers and barges operating on rivers has increased by more than 10 times since the early post-liberation period, and motor-driven steamers and barges are handling approximately 88 percent of the total freight load. The largest barge fleet can handle a load of nearly 10,000 tons. Before, it took a passenger ship 12 days to make a round trip between Wuhan and Shanghai; now it takes only 7 days, and an express ship takes only 5 days. At the time of liberation, there were only 17 ports and 72 wharves along the Changjiang River. There was not even a single loading-unloading machine. Now there are 25 port administration bureaus with more than 200 stations, some 400 wharves and 3,000 sets of loading-unloading machines. Loading and unloading at the ports are now mechanized or semimechanized.

In recent years, an advanced form of transport--the sectional pusher barge transport--has been popularized in the Changjiang River, the Heilongjiang River and other main inland rivers. At present, there are more than 300,000 tons of sectional barges, each with a capacity of 200-1,000 tons. The largest pusher tugs have 4,000 horsepower and can push 12,000-15,000 tons of cargo at one time. In the organization of transport, large loads over long distances are carried [illegible] special trips, and the use of containers is being popularized, thus speeding up and raising the quality of freight transport. The Changjiang Navigation Bureau, for example, has opened more than 30 special transport lines for transportation according to "five fixed terms," namely, fixed ships, fixed time, fixed berths, fixed amounts of loads and fixed types of cargo. These special transport lines handled more than 60 percent of the cargoes from the enterprises. In 1965, a system of "chain" transport special line was organized and participated by the marine transport bureaus, the harbor administration bureaus, the commercial bureaus, and the railway bureaus, for transporting sundry goods from Shanghai to the three northeastern provinces via Dalian. The port administration departments arranged special ships, special berths, and special loads to be transported at specific times, while the railway departments arrange special railway wagons. This system has worked very well for more than 10 years.

In 1980, 9,000 more seats were provided for passengers and 1,124 vessels, totaling nearly 400,000 tons, were added to the cargo fleet for marine and river transport. There were also five berths for ships of the 10,000-ton class and another two for ships of the 5,000-ton class in addition to a passenger terminal in Dalian Harbor, all built in the same year to augment the marine and river transport capacity. In the same year, the freight carried by coastal and river transport amount to 350 million tons, and the number of passengers carried totaled 260 million being increases by 0.2 percent and 9.1 percent respectively over those of 1979. Priority was given to the transportation of agricultural products, light and textile industrial products, coal, petroleum and other key materials.

In 1980, coastal and the Changjiang River transport also underwent new developments. The new techniques of containerized transport was popularized at sea and in the Changjiang River, and five ports--Tianjin, Shanghai, Qingdao, Dalian and Huangpu--inaugurated their international container service, handling a volume of more than 60,000 containers and more than 380,000 tons of cargo, an increase of 96 percent and 133 percent over 1979. Since its inception in the 1960's along the coast and in the Changjiang River, interport transport of combined loads has expanded to 59 navigation routes and some 5 million tons of cargo have been handled. After making sure that domestic requirements were fully met, the ships engaged in coastal transport, fully utilized their potential and allocated part of their capacity, some 500,000 tons, for the foreign trade on the international runs. Seven ports along the Changjiang River, namely, Nanjing, Nantong, Jiujiang, Wuhu, Wuhan, Huangshi, and Chongqing, opened their foreign trade transport offices in 1980 and carried more than 200,000 tons of foreign trade cargoes. Two more "five fixed terms" special transport lines were opened for sundry goods between Fuzhou and Shanghai via Wenzhou.

2. Ocean Transport

Before liberation, China had practically no ocean transport of its own. For a long time, several foreign shipping companies with their offices in Shanghai, Tianjin and other ports, monopolized China's ocean shipping.

After the birth of New China, the China-Poland Shipping Company, a joint venture set up in 1951 with Poland, marked the beginning in the development of China's ocean shipping. In the 1950's, China's foreign trade materials still mainly relied on foreign ships for transport.

In the 1960's, China began to develop its own oceangoing merchant fleet in a systematic and planned way, and under the spirit of self-reliance. In 1961, the China Ocean Transport Company was formally established and in April, its first oceangoing passenger ship "Guanghua" made its maiden trip to Indonesia. Later, the "Heping" and "Youyi" cargo ships visited Burma, Sri Lanka and Guinea in West Africa.

China had only 20 ships with a deadweight of 190,000 tons when its oceangoing merchant fleet was first formed. The fleet grew each year and was vigorously developed in the 1970's. By the end of 1980, it already had 431 ships with a deadweight of 7.92 million tons. Thus in 20 years, the number of ships increased by more than 30 times. These ships, flying five-star red flags are now China's main marine transport force, calling at more than 400 ports in some 100 countries and regions. In 1980, they carried a total of 33.9 million tons or a freight turnover of 143 billion ton/nautical miles. They have also entered the international transportation market, undertaken the shipping of cargo for third countries, and made positive contributions to the development of China's foreign trade, the support for socialist economic construction, and the promotion of friendly relations with people of various countries. China's Ocean Shipping General Office is located in Beijing, and ocean shipping companies have also been set up in Shanghai, Guangzhou, Tianjin, Qingdao and Dalian. There are also other joint ventures, such as the China-Poland Marine Transport Company, the China-Tanzania Joint Marine Transport Company, the China-Sri Lanka Joint Marine Transport Company. There is also the PRC Merchants Steam Navigation Company in Hong Kong. In 1980, China's Ocean Shipping General Company and Jiangsu, Zhejiang and Hebei Provinces set up ocean shipping companies as joint ventures.

Now, China's oceangoing fleet is fairly well equipped. In addition to various classes of miscellaneous cargo ships, it is also in possession of a fairly large number of large bulk cargo ships and tankers. In recent years, some new and technically advanced roll-on, roll-off vessels, containerized ships and multipurpose ships have been added. Some berths are now equipped with automatic devices for unmanned engine rooms.

China began containerized transport in 1973. At that time, these containers were loaded at Xingang and Shanghai, and the number of containers handled did not exceed 100 each month, and the ships used were ordinary scheduled miscellaneous cargo ships. It was basically a form of feeder-line service. In 1978, the China-Australian line was inaugurated with two semicontainerized ships departing from Shanghai and Xingang to Sydney and Melbourne once a month. More than 200 containers were carried on each trip. In January 1980, some changes were made whereby two roll-on, roll-off vessels were put on this run and four scheduled trips were made each month, now transitting Hong Kong to pick up more load. In early June, scheduled trips from Huangpu Harbor to Europe with a stopover at Hong Kong to pick up loads were inaugurated. Two trips were made each month. In November, scheduled trips began from Shanghai to Hong Kong and then various ports in West Africa, at the rate of once a month.

The rapid development of ocean shipping and the increased contacts with foreign countries in recent years have further promoted international cooperation. The China Ocean Shipping Company has arranged with the shipping companies of Holland, Belgium and Australia to form the Transoceanic Agency (Rotterdam, Holland), the Kau-shi-fei-er Shipping Agency (Antwerp, Belgium) and the Wuxing [Five Stars] Shipping Agency (Sydney, Australia), for handling shipping business as joint ventures. It also set up in Japan and Holland the Zhongling Shipping Service Company and the Yuantong Shipping Service Company respectively for the same purpose.

3. Navigation Routes and Harbor Construction

When PRC was founded, there were only 73,600 kilometers of navigable waterways of which only 24,200 kilometers were suitable for motor-steamers. Most of the rivers remained in their natural state. There were along the coast only 6 large harbors with 119 berths.

Since the founding of the People's Republic, China's navigation routes and harbor construction have made great progress. In 1961, the navigable mileage was increased to a total of 172,000 kilometers, an increase of 1.3 times compared with that of the early post-liberation period. In the past 10 years and more, the navigable mileage was greatly reduced because of obstructions by dams and culverts thoughtlessly built. In 1980, it was reduced to 108,000 kilometers, but still 47 percent more than in the early post-liberation period.

In opening up and improving the navigation routes, China has had experiences of success as well as lessons from failure. From 1958 to 1960, the policy of "unified planning, comprehensive utilization and periodical construction" was adopted with fairly good results. In only 3 years, 404 kilometers of the northern section of the Beijing-Hangzhou Canal became navigable by fleets of 2,000-ton class barges, in addition to the construction of 10 shiplocks along with other suitable water conservation projects. The conditions of navigation was thus fundamentally improved. The capacity for traffic was increased 10 times, and can now accommodate ships of 2,000-2,500 tons. It can now help reduce the traffic pressure on the southern section of the Tianjin-Pukou Railway and is playing a positive role in irrigation, flood-prevention and drainage in waterlogging, besides promoting industrial and agricultural production in the local areas. The Lianjiang River in Guangdong Province, 262 kilometers long, is a mountain river with many shoals and rapids, a zigzag course and a fairly high gradient. The work to harness this river began in 1959, and by 1975, 10 cascades were built from Lianzhou to Hanguang and the river was basically canalized. At the lower reaches of Hanguang, an enrockment was built. The 660 kilometer section of Changjiang River between Chongqing and Yichang is commonly called a "natural barrier" because of its location in high mountains and deep gullies and the three famous gorges. There were 128 shoals in this section of river. Work to control it began in 1953, and by 1978, 101 of these shoals were brought under control and the standard of the navigation route was raised from 2.1 x 33 x 400 meters up to 2.9 x 60 x 750 meters. Now vessels of the 1,000-ton class can navigate it day and night throughout the year, since navigation here is no longer confined to certain seasons.

Since the 1960's, because of negligence in the management of navigation channels and in organizing the navigation network, the problem of comprehensive utilization of water resources was not satisfactorily solved, and more than 2,000 obstructive dams were built. As a result, many channels were silted up once again. Since 1961, the navigable mileage has been progressively reduced at the rate of 2.5 percent each year, and by 1979, the length of navigable channels were reduced by 63,000 kilometers. In the Peijiang River of Sichuan, for example, there were originally 500 kilometers of navigation channels. However, because of the 10 power stations of a water-drainage type being built along the river, the whole channel has been blocked up.

In harbor construction along the coast, China's main efforts were directed at repairing and altering some old harbors in Shanghai, Tianjin and Qingdao, and building some deep-water berths in Zhanjiang and a few other places. China's foreign trade has been greatly increased since the 1960's, and the insufficiency of wharves along the coast has been a great handicap to Chinese national economic development. In 1973, the state decided to enlarge the traffic handling capacity of the harbors and carried out a vigorous program of harbor construction. After several years' efforts, a number of bulk cargo, miscellaneous cargo, petroleum and passengers wharves were built along with the setting up of facilities for oil and water supply. The outlook of harbor began to change, and more than 300 berths at the wharves, including 139 deepwater berths suitable for vessels of the 10,000-ton class have been built. Formerly, there was in Dalian Harbor only one crude oil wharf suitable for vessels of the 20,000-ton class. Now there are four harbors with berths for oil tanks of 100,000 tons, 50,000 tons and 20,000 tons. Each year, some 41 million tons of oil can be transported out of these harbors. The capacity of the coal and miscellaneous goods wharves has also been greatly increased. Construction of container wharves are now going on in Tianjin, Shanghai and Huangpu harbors, and will soon be ready for operation.

4. Water Transport Industry

Water transport industry serving water transport had a very weak foundation before liberation. In 1950, the total output value of this industry directly under the Ministry of Communications was only 10.95 million yuan. There were then 450 metal cutters and 6 small dry docks suitable for only repairs and refitting jobs, or capable of making a small number of barges. The local water transport industry consisted of a very small number of plants capable of building some wooden sailboats only. All harbor machinery had to be imported.

Along with the development of water transport and after 30 years' efforts in construction, the water transport industry has made fairly good progress in ship maintenance, shipbuilding, harbor machine-manufacturing and the production of accessories and spare parts. In 1980, the water transport industry enterprises directly under the Ministry of Communications had more than 8,300 sets of metal cutters, 24 docks (15 dry and 9 floating ones) suitable for ships of 3,000 tons or more, and 61 small ship platforms and slipways. Their annual output value was 613 million yuan, being 56 times that in the early post-liberation period. Now, the water transport industry enterprises in the majority of areas can build steel ships and some plants can even build freighters of 3,000 or 5,000 tons.

The policy of "repairing and building with greater stress on repairing" was implemented in the ship repairing and building industry. This industry was developed in a planned and proportionate way along with the development of water transport. In China's coastal areas and along the Changjiang River, nearly all the large ports have their own supplementary shipyards so that ships arriving at these ports can be promptly and conveniently serviced. In recent years, all plants have improved their business management and raised their efficiency and quality according to the slogan "Reduce the repair period, improve the quality, lower the operational costs and offer good services." They have also made great efforts in adopting advance techniques for repairs, and are now commonly using hydraulic jetting for removing rusts; the magnetic creeper for removing rusts from ship sides, airless injection of paint, electrical scaffolds hanging on the sides, laser measurement, chemical cleaning and other new techniques. For the mechanization of benchwork and plumbing, many plants have used hydraulic and pneumatic tools for dismantling and assembling. They have also successfully manufactured the tube-bending machine using flames and the intermediate frequency tube-bending machine. Plumbing has been basically mechanized. Improvement has also been made in the organization of ship repairs. Instead of the old method of organizing production according to the types of work, technical process is now used, and a system of production organization embracing many fixed types of work in the dock has been formed. In shipbuilding, we are now capable of designing and building oceangoing ships of the 10,000-ton class, tugboats with 4,000 horsepower, various types of freighters for the coastal runs and for navigation in the Changjiang River, and barges of 5,000 tons. In September 1978, the Shanghai Shipyard built the first ship for the China-Poland Shipping Company for export--the 14,000-ton ocean freighter "Shaoxing." The main engine of the ship, manufactured by the same shipyard, is a 6 ESDZ 76/160 model low-speed heavy-duty diesel engine with a sustained efficiency of 9,000 horsepower. The body of the ship, the power machinery, the navigation aids and the communications equipment were entirely up to our own standard for steel seagoing ships and met the requirements of international pacts. Its main performances have been proved to be satisfactory in test runs and have received favorable comments from the users. In 1980, the water transport industry directly under the Ministry of Communications repaired 1,128 ships of various types in the country in addition to 20 foreign ships; built ships totaling 183,000 tons, including four 900-horsepower tugboats for Romania, and 10 barges of 1,000 tons for Hong Kong shipowners; and completely built "Tianhu," a passenger-cargo ship of 5,000 tons to sail in the Bohai Bay.

Port machinery industry began in 1960, and after 20 years' development, a fairly good system has been formed. At present, there are eight port machinery plants capable of designing and manufacturing various types of tire hoists, forklifts, tow-cars, single-bucket lifting machines, bulldozers and other mobile machinery. It can also produce gantry cranes, portal cranes, bulk cargo loading machines, vacuum machines for picking up loose grain, container loaders to be used at river banks, container lifts with wheels, container tow-cars and other large special machinery; and floating cranes of the fixed-boom type and the rotary type, grab buckets and magnetic loading machines. In recent years, China has also produced port machinery for export in addition to meeting domestic needs. Among the exported items were 1CM^3 single bucket machines, portal cranes of 30 tons, 40 tons, 63 tons and 150 tons; and many types of grab buckets.

5. Rescue, Salvage and Towing Operations

Rescue and salvage at sea have gradually developed since the birth of New China. In 1951, when the Chinese People's Salvage Company was formed, there was only one 150-horsepower tugboat and 37 divers. After 1975, the China Sea Rescue and Salvage Company, the China Towing Company and the China Marine Engineering Service Company gradually developed into a joint undertaking, and sea rescue and salvage companies were formed in Guangzhou, Shanghai and Yantai. In Hong Kong, the Huade Marine Engineering Company Limited now acts as China's agent. China has also signed agreements of cooperation with seven countries including Japan and England.

At the end of 1980, the company had 600 divers, 800 engineering technicians, and 121 ships of various types. The most powerful tugboat used had 20,800-horsepower and was equipped with 2,500-ton floating cranes for use at sea. There were salvage engineering ships totaling 3,200 tons equipped with auto-pilots, deck barges of 5,000 tons, and various types of diving and salvaging equipment. This is quite a strong marine engineering force for sea rescue, salvage and towing operation in the ocean.

The China Sea Rescue and Salvage Company has faithfully fulfilled its international obligations in sea rescue. There are altogether 11 permanent rescue stations along the coast in addition to some seasonal stations with rescue ships standing by 24 hours a day and ready to be dispatched at any time. In the past 30 years, rescue operations have been carried out for more than 730 ships in distress, including 106 ships of some 20 countries and regions, and some 4,800 persons have been rescued. In 1979, despite poor weather and complex topographic conditions, the Guangzhou Rescue and Salvage Company rescued a freighter "American Lion" of an American shipping company which had been stranded on a shoal near Xisha. This rescue operation won praises from people in the rescue and salvage circles over the world.

In recent years, the techniques of salvaging sunken ships have also made progress. In 1976, the methods of underwater defueling and utilization of floating power inside sunken ships were used. The salvage operation on the "Nanyang" oil tanker of the 10,000-ton class was a success. In 1977, in an effort to clear away the obstructions for a fishing ground in the Niushan Area of Fujian, salvage of a Japanese freighter "Aba Maru"--sunk shortly before the end of World War II--began. After overcoming the strong wind and rough sea, the salvage crew finally completed their mission in about 400 workdays. The front part of the ship was brought to the surface, and some 5,000 tons of cargo were recovered in addition to the remains of more than 300 Japanese who had perished with the ship. These remains were later handed over to the Japanese Government. This operation formed a proud chapter in China's history of sea rescue and salvage. Besides tempering the salvage crew, it has also promoted friendly relations between the Chinese and Japanese peoples. In 1979, another successful salvage operation was carried out on a 15,000-ton freighter "Hanyin," and some experience was gained in the use of buoyancy pontoons. In the past 30 years, the China Sea Rescue and Salvage Company has salvaged 910 sunken ships of varying sizes and played a great role in keeping the harbor channels open and assuring shipping safety.

With the continued increase of high-power tugboats, our towing trade has developed from coastal to international operations. In the past several years, we have towed drilling platforms, large oil tankers, cargo ships, barges, engineering ships, floating cranes, floating docks and ocean deck-barges containing complete sets of heavy equipment, in a total of 419 operations to and from China, Singapore, Japan and India. This company has also undertaken the mission of ferrying a 3,600-horsepower tugboat from Japan to Mauritania. The safe, dependable and on-schedule towing operation won favorable comments from the shipowner.

In serving off-shore exploitation of oil, there has been great developments in the ocean engineering service. Since 1977, we have undertaken 14 towing operations for large drilling platforms of the self-elevating and half-submerged types to and from Japan, Singapore and China. We have performed the tasks of towing drilling platforms, shifting their positions and standing guard on them on behalf of the British BP Petroleum Company, and China's Ministry of Petroleum Industry and Ministry of Geology in the Yellow Sea, the East Sea and the South Sea. We have also performed diving operations to recover sunken materials at a depth of 76 meters and to check the piles supporting the platforms. In addition, we undertook underwater engineering and diving missions for harbors, reservoirs, mines and hydropower stations; and the laying of underwater cables and pipelines.

The diving equipment industry serving rescue and salvage operations has also continued to develop. The diving equipment plants in Shanghai and Wuhu are producing various types of equipment for light-diving, heavy-diving and helium-oxygen heavy-diving, for various purposes, such as electric cutting, electric welding and supplying illumination. These items are not only meeting the needs of the home market but are also selling well abroad. Scientific research in rescue and salvage has also made considerable progress. We have had rich experiences in diving with air-tanks. In 1975, we successfully conducted a test in diving with helium and oxygen to a depth of 156 meters. We have now entered the stage of application in helium-oxygen diving. Underground welding, welding and cutting with electricity and oxygen, directional blasting and grab-bucketing, salvaging with power suction and other new techniques are now in popular use.

In 1980, all rescue, salvage and towing companies have conscientiously implemented the policy of "simultaneous development of rescue, salvage and towing work with greater stress on rescue," and achieved good results in various undertakings. In the same year, they rescued 60 ships, salvaged 50 ships and performed 85 towing operations. Along with the rapid development of China's ocean shipping, there will also be rapid development for its rescue, salvage, towing and other related marine engineering services.

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RAPID DEVELOPMENTS BEING MADE IN CIVIL AVIATION

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[Article by Wu Erer [2976 5079 5101] of China's Civil Aviation General Administration: "China's Civil Aviation"]

[Text] After 30 Years' Construction

Civil aviation belongs to a modernized communications and transportation department directly serving industrial and agricultural production. It has the advantages of speed, flexibility, versatility and effectiveness. However, the development of civil aviation in Old China was very slow, and its foundation was very weak. China's civil aviation began in 1929, and by 1949, the total transport turnover was only 200 million ton/kilometers. In November 1949, the state established the Civil Aviation Bureau, and scheduled flights began in August 1950. In 1951, the bureau began to undertake special flight missions. In April 1962, the China Civil Aviation Bureau was changed to China Civil Aviation General Administration with six regional offices set up in Beijing, Shenyang, Shanghai, Guangzhou, Chengdu and Lanzhou, all having affiliated provincial, municipal, autonomous regional civil aviation bureaus and aviation stations.

Since the founding of the People's Republic, our civil aviation has developed rapidly. Air transportation has increased at a progressive rate of 20 percent each year, and the total annual turnover has reached 430 million ton/kilometers, an increase of 1.1 times compared with the sum total of aviation transport turnover in the 20 years before liberation. Special air missions have increased at an average progressive rate of 15 percent each year, and the amount of flying time has reached 43,000 hours. After 30 years' construction, our civil aviation system is now fairly well established, and is playing an important role in national economic construction and in people's livelihood.

There are now 182 routes for our civil aviation and the mileage of air routes now totals approximately 210,000 kilometers, including some 110,000 kilometers for 159 domestic routes and some 90,000 kilometers for 23 international routes.

Domestic flights cover more than 80 cities. A domestic aviation network connecting Beijing with the capitals of all provinces and regions, and all important cities has been basically completed. The ratio of air transport in the entire communications and transportation system has been raised year after year, and its advantages, such as safety, speed, comfort and economy, are being increasingly recognized. The state has attached great importance to aviation development in the national minority areas as well as the remote and frontier regions. Scheduled flights have now become an important means of transportation to Xizang and Xinjiang. There are direct flights from Chengdu, Xian and Lanzhou to Lhasa; and direct flights from Beijing to Ulumuqi, the total flight time being only slightly over 3 hours. The frontier regions are now much closer to the inland. In Xinjiang Autonomous Region, there are 10 aviation stations, forming a local aviation network.

Because of our higher international prestige, our economic construction and the development of tourism, China's domestic and international flights have rapidly developed. Our international flights are now going to 21 cities of 18 countries in 4 continents. They are Pyongyang of Korea, Rangoon of Burma, Moscow of the Soviet Union, Tokyo, Osaka and Nagasaki of Japan, Karachi of Pakistan, Paris of France, Tehran of Iran, Bucharest of Romania, Frankfurt of West Germany, Addis Ababa of Ethiopia, Belgrade of Yugoslavia, Zurich of Switzerland, Shajah of United Arab Emirates, Baghdad of Iraq, London of England, Manila of Philippines, Bangkok of Thailand and New York and San Francisco of the United States.

China has signed interagreements with more than 40 countries and established business relations with the aviation companies of more than 180 countries and regions. In November 1971, the International Air Travel Association at its 74th council meeting adopted a resolution for the restoration of our legitimate seat. In September 1974, this organization in its 21st Congress elected China as one of the council members, and we have already sent a permanent delegation to the International Air Travel Association. We have also participated in the "Hague Pact" and the "Montreal Pact" for the prevention of hijacking.

We have set up a fairly complete system of special flight missions. Since 1951, special flights, first used for air sprays of insecticide to kill flies, have been increased to be used for more than 10 purposes, such as aerial photographing, air prospecting, air reconnaissance, marine transport and rescue, air sowing of seeds for agricultural crops, application of fertilizers, air sprays of herbicide and pesticide, sowing seeds for forestry, destroying insects, protecting forests, putting out fires, sowing seeds for pastures, and making artificial rains. These activities have been going on in 29 provinces, municipalities and autonomous regions throughout the country (with the exception of Taiwan Province). Flying time has increased by 43 times over tnat of the early post-liberation period. Some 200,000 flying hours have been spent on aerial photographing and more than 500 million mu has been air sprayed with insecticide. Seeds for forests have been sown over more than 160.000 mu and many places are now covered with luxuriant foliages.

Every year, the state invested in building, expanding and remodeling more than 80 civilian airports. Many of them, including the Shoudu Airport in Beijing, the Hongchiao Airport in Shanghai, the Baiyun Airport in Guangzhou, the Diwopu Airport in Ulumuqi, the Zhangguizhuang Airport in Tianjin, the Luogang Airport in Hofei and the Yanjiagang Airport in Harbin, are suitable for the landings and takeoffs of large passenger jet aircraft. A fairly complete system has been set up in various aviation stations and along various airways to provide facilities in communications, navigation aids and meteorology. In some fairly large airports where the takeoffs and landings of scheduled flights are very frequent, radar surveillance and radar landing facilities are provided to coordinate with flight control at high, medium and low altitudes. The weather stations are supplying accurate weather forecasts. In recent years, China's civil aviation authorities have strengthened the planning and construction of the air route network and provided aviation services to more than 10 foreign airlines.

Our air fleet has continued to expand and now includes some 20 different types of large, small and medium-size aircraft. Used on the international routes and the main domestic routes are Boeing 747, Boeing 707, IL-62, Trident, and IL-18 models; used for short or medium distance flights are the AN-24, AN-12 and Viscount models; and used on short distance flights are the YUN-5, LI-2, IL-14, Skylark, AN-30, Double Otters and BEL-212 models.

In civil aviation, China has its own aircraft maintenance system. In the Beijing maintenance base and the repair shops in Shanghai and Chengdu, there are various types of advanced equipment and highly skilled engineers and technicians who can undertake major repairs on IL-18, AN-24, IL-14, LI-2, and YUN-5 aircraft and their engine overhauls. Maintenance and repair teams and shops are attached to the regional administration bureaus, the provincial, municipal and district bureaus and the aviation stations. These maintenance teams or shops are responsible for transit checks or overnight inspections on domestic and international flights.

The Chinese civil aviation authorities have paid great attention to the education, training and scientific research in aviation. The Chengdu Civil Aviation Flight School and the Tianjin Civil Aviation Technical School are respectively responsible for training flight crews and the ground personnel in handling air control, communications and navigation aids, meteorology, traffic, aircraft maintenance, business management and so forth, and then sending them to various production, business and technical departments within the civil aviation system throughout the country. The six regional civil aviation administration bureaus in Beijing, Shanghai, Guangzhou, Chengdu, Lanzhou and Shenyang all have their training bases and technical schools mainly training aircraft mechanics and other technicians in short courses. The Chinese civil aviation design and research organs for airports can independently undertake the main engineering and designing jobs in building large modern airports. The main engineering work for the Shoudu Airport in Beijing and the Hongchiao Airport in Shanghai, which are large airports, for example, were designed by ourselves. Scientific research has made great contributions to our civil aviation. The equipment for instrument landing and the high-frequency air direction finders manufactured by ourselves have won first class national rewards and rewards from the National Defense Scientific and Technological Commission.

The Chinese civil aviation authorities have faithfully carried out Premier Zhou's directive, "Assure safety as the first requisite, improve the service and strive for on-schedule operation," and have encouraged all workers and staff members to cultivate the "Safety First" concept. We have a fine contingent of airmen, a strict system of flight control, and rules and regulations of work security. We have a high reputation for flight safety. The First Flight Group under the Beijing Administration Bureau, undertakes the scheduled international flights as well as domestic flights along the main domestic routes, in addition to other special and charter flights. Members of this group have taken off and landed in more than 180 cities of some 90 countries all over the world, and maintained a safety record for 24 consecutive years. With the increase of modernized large-scale transport and of communications and navigation equipment, the punctuality of our scheduled flights has been further raised. The civilian aviation authorities attached great importance to passenger service and have constantly increased the service equipment, broadened the scope of services and raised the quality in order to offer better services to the passengers.

Year of Readjustment and Restructuring in 1980

In 1980, the Chinese civil aviation authorities conscientiously implemented the eight-character policy of readjustment, restructuring, reorganization and upgrading, and actively and steadfastly carried out readjustment and restructuring in accordance with the requirements of modernization. Since March 1980, the Civil Aviation General Administration has come directly under the leadership of the State Council, while its affiliated regional administration bureaus, provincial and municipal bureaus, and stations, under the administrative system of dual leadership of their own department and the local governments, but having more direct relations with the former, reorganized their structure so as to be operated in the form of enterprises. The leading bodies of the enterprises, according to state requirements, are staffed with young and healthy persons who are of a high political and ideological level, professionally competent, and experienced in business management. Economic accounting and enterprise management were strengthened, and the regional administration bureaus have practiced independent accounting for their profits and losses, which was later expanded to include the provincial and municipal bureaus as two-level accounting. This has aroused the enthusiasm of the leadership and the broad masses of workers and staff members at various levels in promoting production and increasing the economic benefits. All the bureaus have completed the state's production plans with the best results ever attained since the founding of the People's Republic.

All Production Targets Overfulfilled

In 1980, the total transport turnover was 430 million ton/kilometers, being 7 percent above the annual plan, and an increase of 14 percent over 1979. A total of 3.3 million passengers were carried, being 18 percent above the annual plan and an increase of 12 percent over 1979. The amount of freight and mail transported was 83,000 tons, 17 percent above the annual plan and an increase of 8 percent over 1979. Revenue from cargo transport was 440 million yuan, being 14 percent above the annual plan and 16 percent over 1979. The flying time in special missions was 42,792 hours, being 43 percent above the annual plan and 8 percent over 1979. The annual profit was 62.4 million yuan of which 37 million yuan, being 23 percent above state quota, were handed over to the state. Net foreign exchange earnings amounted to 144 million dollars. The average output value per worker was 14,500 yuan, an increase of 12 percent over 1979.

Fairly Rapid Expansion of International Service

In 1980, five new international routes were opened in China's civil aviation. They were: Beijing-Shajah-Baghdad, Beijing-Karachi-Baghdad, Beijing-Guangzhou-Bangkok, Beijing-Frankfurt-London, and Shanghai Osaka. There were also three new regional routes: Beijing-Hong Kong, Guangzhou-Hong Kong, and Hangzhou-Hong Kong. In the same year, the total number of passengers carried on international flights was 297,000, an increase of 1.01 times over 1979; the amount of cargoes and mail carried was 15,000 tons, an increase of 57 percent over 1979; and the number of extra and charter flights for passengers and cargo nearly doubled that of 1979.

Since April 1980, three Boeing 747 SP passenger planes were added to our international flights. This type of airplane carries a huge load of 291 passengers, and the main flight performances were power controlled. It has an automatic braking system, color weather radar, and a warning system of approaching objects. It has automatic throttles operating throughout the flight, a warning signal when the nose is too high in taxiing, and other advanced features. The average speed is 950 kilometers per hour and the flight can last 15 hours.

Experiments in New Projects for Special Flights

In 1980, new equipment and new technology were adopted to promote the experiments of new projects for special flights. For example, the technology of remote sensing in aviation was used in looking for underground hot water and in conducting general surveys on environmental pollution and soil planning. The advanced technology of superlow-quantity sprays from the air has been used to eliminate agricultural and forest pests. The use of this method can enlarge the coverage by each flight from 300-500 mu to 8,000-10,000 mu and at the same time reduce the quantity to be sprayed from 4 to less than 0.66 jin. Surface, or outside the roots, fertilizers can be applied in combination with the spraying of chemical mixtures or plant hormones to promote the growth of crops and to increase agricultural outputs. Wheat has to be protected against hot dry winds in some provinces or regions and against severe cold in other places in order that agricultural output can be increased by a wide margin. In 1980, special flights to help in agriculture and forestry were conducted over an area of more than 37 million mu, including 10.76 million mu for sowing forest seeds, some 100,000 mu for sowing rice seeds, 310,000 mu for sowing pasture seeds, 18.84 million mu for preventing agricultural and forest pests, 4.13 million mu for applying fertilizers to agricultural crops and 1.59 million mu for spraying herbicides. The quality of work has been much improved.

New Airports and Their Auxiliary Equipment

The expansion of our modern airport, the Shoudu (Capital) International Airport, began in 1974, and lasted 7 years. The main part of auxiliary engineering work was completed and commissioned on 1 January 1980. The newly built runway to the west is 3,200 meters long, 50 meters wide, and 38 millimeters thick, and able to take on a load of 350 tons. It is suitable for takeoffs and landings of the largest airplanes in the world, such as Boeing 747, DC-10 and Concorde. The new terminal can accommodate 1,500 persons during peak hours. The total area of the

structure is 59,500 square meters, and the eastern and western sides of the main terminal are connected to two "satellites" by automatic pedestrian lanes, which are 100 meters long. From the "satellites," the passengers can enter the planes by adjustable bridges. Each "satellite" has eight parking lots for large and medium-size airplanes. In the waiting room there are telegraph, telephone, postal, bank and taxicab booths; electronic video signs showing the movement of scheduled flights, and other advanced passengers service equipment; and closed circuit television, teletypes and other up-to-date means of communication. This is the largest air transport center in China. In 1980, a total of 1,088,000 passengers and 38,000 tons of cargo and mail passed through the Shoudu Airport. A modern flight control and dispatching center--the navigation control tower--will soon be completed and is expected to begin operation by the end of 1981.

Aircraft Maintenance and Total Quality Control

The aircraft maintenance plants and maintenance departments at all levels have strengthened quality and technical control. Three maintenance plants have serviced and released 97 airplanes of various types and 448 aircraft engines. They also completed, remodeled or carried out special maintenance on 11 large and medium-size airplanes including Boeing 707, IL-62, AN-12 and AN-30, and their total output value was 32 million yuan. To fully utilize the present equipment and technical force, these plants have restructured their maintenance system and merged the Beijing Aircraft Maintenance Plant with the aviation repairs and aircraft maintenance departments in the Shoudu Airport to form a Beijing Maintenance Base, which has now become a maintenance center for large and medium-size aircraft in our country.

To meet the requirements of our civil aviation development and after approval by the state, the China Aviation Supply Company was founded on 1 October 1980. This company can directly order from both domestic and foreign sources various aviation supplies and ground equipment including airplanes and aircraft engines. It can also sell the aviation materials and surplus materials produced by our civil aviation plants on the home and foreign markets, and also act as purchasing and selling agents. The company has six offices in Northern China, Eastern China, central-south, southwest, northwest and northeast, to take care of the ordering, procurement and supply so that aviation materials can be more readily available whenever needed.

Education and Technical Training

In 1980, the Chengdu Aviation Flight School enrolled 200 flight students, and 120 of them graduated or completed their training. The Tianjin Civil Aviation Technical School opened 28 classes with an enrollment of 900 students, and another 6 technical schools enrolled 1,000 students. They have trained 15 service teams for Boeing 747 and any new aircraft produced can be promptly put to use.

Among the crew members throughout the country, more than 700 of them have become first pilots, who are also qualified to wet weather minimums for takeoffs and landings, serve as instructors, or to undertake solo flights. All enterprises have attached great importance to on-the-job training for their workers and staff members, and 114 short-term training classes were held in 1980. These classes were participated by 2,300 persons and have effectively raised the technical and vocational levels of the workers and staff members.

Flight Safety and Service Quality

In 1980, "Safety Month," "100-day Contest" "Quality Month" and similar activities aiming at safe production, were carried out throughout the civil aviation system in the country. In implementing the directive of the CCP Central Committee and the State Council on "Insuring Safety for All Flights," the Civil Aviation General Administration has adopted 10 forceful measures and issued a series of rules and regulations, such as "Directive on Insuring Flight Safety and Improving Service Quality," "Flight Rules," "Detailed Rules for Flight Control," "Rules for Investigation in Flight Accidents," "Navigation Rules" and so forth. The system of coordination under the leadership of the officer on duty with flight dispatch as the central task--which was abolished during the 10 years' of catastrophy--was restored, so that in organization as well as the system of operation, the safety factor is always stressed. By strengthening the organizational work in building up the contingent of crew members, the pilot in command can now exercise greater discretionary power in times of emergency. Among the 24 flying groups, 21 of them have had a clean record with no serious flight accident at all. The flying group under the Beijing Administration Bureau also maintained an error-free record for 400 consecutive days. In 1980, there were a total of 26,243 scheduled flights, 78 special flights and 3,403 additional or charter flights. The punctuality rate for both departures and arrivals was higher than in 1979, and the on-schedule rate of international flights was up to 99.3 percent.

The Chinese civilian aviation authorities have repeatedly taught the workers and staff members to serve the passengers, both Chinese and foreigners, wholeheartedly. In 1980, the "If I Were a Passenger" campaign was launched and greater attention was paid to training for better services. Some persons were sent abroad to learn from the experiences of foreign airlines with a view to further improving our service. After state approval, booths selling tax-free commodities were opened in the international airports in Beijing, Shanghai and Guangzhou. Local products with special national characteristics are on sale in these booths as a direct source of foreign exchange income. This is a convenience to the departing foreigners and the Hong Kong and Macao compatriots and is welcomed by all passengers. The state also earns more foreign exchange this way. The Beijing Civil Aviation Administration Bureau and the Hong Kong Chinese Catering Company has formed the Beijing Air Catering Company as a joint venture. This company began its operation in May 1980. With its advanced equipment and meticulous management, this company has not only undertaken the catering service for all our domestic and international flights department from Beijing, but also provided the airlines of Romania, Yugoslavia, Pakistan, West Germany and six other countries with high-quality in-flight meals.

Progress in the Midst of Development

Our civil aviation has made good progress in the 30 years of construction. However, we are still far behind some advanced countries. The volume of air transport amounts to only a very small portion of the total volume of transport, and there are no schedule flights for many small and medium-size cities. People generally cannot afford to use this most advanced means of transportation for travel. The system of management, labor and wages are all inadequate for civil aviation to be run in the form of enterprises, and further readjustment, restructuring, consolidation and improvement are required.

Our four modernizations and the growth of tourism have made even higher demands on civil aviation. The state policy calling for the development of civil aviation in the midst of national economic development is a very correct one. Based on this policy, the various economic indices for civil aviation continued to increase in recent years. If civil aviation has to be run in the form of enterprises, an overall balance should be maintained and the system of management, the form of business operation and the methods of control should be improved. Since 1981, we have adopted the system of responsibility for our own finance, and for profits quotas on the understanding that above-quota profits will be shared and that business losses will not be made good by the state. All regional administration bureaus have further strengthened their cooperation in handling through loads so as to make greater utilization of the carrying capacity and to increase the economic benefits. The system of labor has also been improved, and instead of a compulsory labor service, there is now a system of regular employment. International flights have been greatly developed; the domestic routes have been revised; airports have been built or expanded; new routes have been opened; and scheduled flights are now more frequent to meet the demand of growing tourism. Construction of Guilin Airport was completed in May 1981 and can now accommodate large airplanes. The Fuzhou and Tunxi airports are still under construction. Furthermore, the airports at Changsha, Dalian, and Nanchang airports will be renovated, and repairs will be carried out on the airports at Tunhuang, Datong, Qingdao, Quangzhou, Lushan and Sanya, so that all key tourist attractions will be accessible by airplanes.

The training of qualified personnel and intellectual cultivation should be carefully attended to. Higher education and scientific research has been stepped up in civil aviation. We have planned on applying to the State Council for permission to change the Tianjin Civil Aviation Technical School into a civil aviation school so as to create the necessary conditions for training various types of highly qualified technicians with Beijing as the training center during the Sixth Five-Year Plan.

We must continue to keep up our flight safety record, raise the rate of on-schedule operation, improve the service and increase the competitive power of our civil aviation as a contribution to the modernization of our motherland.

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